

WEST Search History

DATE: Monday, December 16, 2002

Set Name Query

side by side

Hit Count Set Name

result set

DB=JPAB; PLUR=YES; OP=OR

L11 2000308301

1 L11

DB=DWPI; PLUR=YES; OP=OR

L10 2000308301

1 L10

DB=USPT; PLUR=YES; OP=OR

L9 L8 and lithium

26 L9

L8 L7 and (battery or electrochemical) and (electrode or anode or cathode)

35 L8

L7 olivine

827 L7

DB=DWPI; PLUR=YES; OP=OR

L6 2001842483

0 L6

L5 olivinic

5 L5

DB=USPT; PLUR=YES; OP=OR

L4 olivinic

2 L4

L3 L2 and (phosphorous or phosphate or phosphoric)

63 L3

L2 L1 and (fe or iron)

318 L2

L1 ((429/224)!.CCLS.)

811 L1

END OF SEARCH HISTORY

FILE 'HOME' ENTERED AT 15:20:39 ON 16 DEC 2002

=> file reg

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

0.21

0.21

FILE 'REGISTRY' ENTERED AT 15:20:49 ON 16 DEC 2002

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2002 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 15 DEC 2002 HIGHEST RN 476300-36-4

DICTIONARY FILE UPDATES: 15 DEC 2002 HIGHEST RN 476300-36-4

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP PROPERTIES for more information. See STNnote 27, Searching Properties in the CAS Registry File, for complete details:

<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> s (0.01-2)/Li and (0.5-0.95)/Mn and (0.5-1)/Fe and (0.01-0.95)/Ti and (4)/(PO)
MISSING OPERATOR

=> e (0.01-2)/Li and (0.5-0.95)/Mn and (0.5-1)/Fe and (0.01-0.95)/Ti and (4)/(PO)
'(PO)' IS NOT A VALID EXPAND FIELD CODE FOR FILE 'REGISTRY'
The indicated field code is not available for EXPAND in this file. To see a list of valid EXPAND field codes, enter HELP SFIELDS at an arrow prompt (=>).

=> e (0.01-2)/Li and (0.5-0.95)/Mn and (0.5-1)/Fe and (0.01-0.95)/Ti and (1)/P and (4)/O
'(0.01-2)/LI AND (0.5-0.95)/MN AND (0.5-1)/FE AND (0.01-0.95)/TI AND (1)/P AND (4)'
IS NOT A VALID NUMERIC VALUE
Only valid numeric terms can be EXPANDED in numeric fields. Valid numeric terms are zero and any term with an absolute value between 1 E-78 and 1 E74. Non-numeric characters are not permitted in the EXPAND command for numeric fields. To see a list of numeric and text fields in the current file, enter "HELP SFIELDS" at an arrow prompt (=>).

=> s (0.01-2)/Li and (0.5-0.95)/Mn and (0.5-1)/Fe and (0.01-0.95)/Ti and (1)/P and (4)/O

87622 (0.01-2)/LI
6916 (0.5-0.95)/MN
635116 (0.5-1)/FE
34621 (0.01-0.95)/TI
815165 (1)/P
2967528 (4)/O

L1 0 (0.01-2)/LI AND (0.5-0.95)/MN AND (0.5-1)/FE AND (0.01-0.95)/TI
AND (1)/P AND (4)/O

=> s LiMnFeTiPO4

L2 0 LIMNFETIPO4

```
=> s (0.01-2)/Li and (0.5-0.95)/Mn and (1)/P and (4)/O
      87622 (0.01-2)/LI
      6916 (0.5-0.95)/MN
      815165 (1)/P
      2967528 (4)/O
L3      45 (0.01-2)/LI AND (0.5-0.95)/MN AND (1)/P AND (4)/O

=> s (0.01-2)/Li and (0.5-0.95)/Mn and (0.01-0.95)/Ti and (1)/P and (4)/O
      87622 (0.01-2)/LI
      6916 (0.5-0.95)/MN
      34621 (0.01-0.95)/TI
      815165 (1)/P
      2967528 (4)/O
L4      0 (0.01-2)/LI AND (0.5-0.95)/MN AND (0.01-0.95)/TI AND (1)/P AND
      (4)/O

=> s (0.01-2)/Li and (0.5-0.95)/Mn and (0.01-0.95)/Ag and (1)/P and (4)/O
      87622 (0.01-2)/LI
      6916 (0.5-0.95)/MN
      2422 (0.01-0.95)/AG
      815165 (1)/P
      2967528 (4)/O
L5      0 (0.01-2)/LI AND (0.5-0.95)/MN AND (0.01-0.95)/AG AND (1)/P AND
      (4)/O
```

```
=> d l3 1-5
```

```
L3 ANSWER 1 OF 45 REGISTRY COPYRIGHT 2002 ACS
RN 475273-80-4 REGISTRY
CN Cobalt iron lithium manganese nickel phosphate ((Co,Fe,Mn,Ni)Li(PO4))
(9CI) (CA INDEX NAME)
MF Co . Fe . Li . Mn . Ni . O4 P
AF Co0-1 Fe0-1 Li Mn0-1 Ni0-1 O4 P
CI TIS
SR CA
LC STN Files: CA, CAPLUS
```

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0 - 1	7440-48-4
Ni	0 - 1	7440-02-0
Mn	0 - 1	7439-96-5
Li	1	7439-93-2
Fe	0 - 1	7439-89-6

```
1 REFERENCES IN FILE CA (1962 TO DATE)
1 REFERENCES IN FILE CAPLUS (1962 TO DATE)
```

```
L3 ANSWER 2 OF 45 REGISTRY COPYRIGHT 2002 ACS
RN 474903-03-2 REGISTRY
CN Iron lithium manganese phosphate (Fe0.1LiMn0.9(PO4)) (9CI) (CA INDEX
NAME)
MF Fe . Li . Mn . O4 P
AF Fe0.1 Li Mn0.9 O4 P
CI TIS
SR CA
LC STN Files: CA, CAPLUS
```

Component	Ratio	Component Registry Number
O4P	1	14265-44-2

Mn	0.9	7439-96-5
Li	1	7439-93-2
Fe	0.1	7439-89-6

1 REFERENCES IN FILE CA (1962 TO DATE)
1 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L3 ANSWER 3 OF 45 REGISTRY COPYRIGHT 2002 ACS
RN 474903-00-9 REGISTRY
CN Iron lithium manganese phosphate (Fe_{0.3}LiMn_{0.7}(PO₄)) (9CI) (CA INDEX NAME)

OTHER NAMES:

CN Phosphoric acid, iron(2+) lithium manganese(2+) salt (10:3:10:7)
DR 371145-94-7
MF Fe . Li . Mn . O4 P
AF Fe_{0.3} Li Mn_{0.7} O4 P
CI TIS
SR CA
LC STN Files: CA, CAPLUS, USPATFULL

Component	Ratio	Component Registry Number
=====	=====	=====
O4P	1	14265-44-2
Mn	0.7	7439-96-5
Li	1	7439-93-2
Fe	0.3	7439-89-6

1 REFERENCES IN FILE CA (1962 TO DATE)
1 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L3 ANSWER 4 OF 45 REGISTRY COPYRIGHT 2002 ACS
RN 474902-99-3 REGISTRY
CN Iron lithium manganese phosphate (Fe_{0.35}LiMn_{0.65}(PO₄)) (9CI) (CA INDEX NAME)

MF Fe . Li . Mn . O4 P
AF Fe_{0.35} Li Mn_{0.65} O4 P
CI TIS
SR CA
LC STN Files: CA, CAPLUS

Component	Ratio	Component Registry Number
=====	=====	=====
O4P	1	14265-44-2
Mn	0.65	7439-96-5
Li	1	7439-93-2
Fe	0.35	7439-89-6

1 REFERENCES IN FILE CA (1962 TO DATE)
1 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L3 ANSWER 5 OF 45 REGISTRY COPYRIGHT 2002 ACS
RN 474317-42-5 REGISTRY
CN Iron lithium manganese phosphate (Fe_{0.2-0.6}LiMn_{0.4-0.8}(PO₄)) (9CI) (CA INDEX NAME)

MF Fe . Li . Mn . O4 P
AF Fe_{0.2-0.6} Li Mn_{0.4-0.8} O4 P
CI TIS
SR CA
LC STN Files: CA, CAPLUS

Component	Ratio	Component Registry Number
=====	=====	=====

=====+=====+=====		
O4P	1	14265-44-2
Mn	0.4 - 0.8	7439-96-5
Li	1	7439-93-2
Fe	0.2 - 0.6	7439-89-6

1 REFERENCES IN FILE CA (1962 TO DATE)
 1 REFERENCES IN FILE CAPLUS (1962 TO DATE)

```
=> s (0.01-2)/Li and (0.5-0.95)/Mn and (0.01-0.99)/Zn and (1)/P and (4)/O
      87622 (0.01-2)/LI
      6916 (0.5-0.95)/MN
      19436 (0.01-0.99)/ZN
      815165 (1)/P
      2967528 (4)/O
L6      0 (0.01-2)/LI AND (0.5-0.95)/MN AND (0.01-0.99)/ZN AND (1)/P AND
      (4)/O
```

```
=> s (0.01-2)/Li and (0.5-0.95)/Mn and (0.01-0.99)/Mg and (1)/P and (4)/O
      87622 (0.01-2)/LI
      6916 (0.5-0.95)/MN
      23146 (0.01-0.99)/MG
      815165 (1)/P
      2967528 (4)/O
L7      9 (0.01-2)/LI AND (0.5-0.95)/MN AND (0.01-0.99)/MG AND (1)/P AND
      (4)/O
```

```
=> s (0.01-2)/Li and (0.5-0.95)/Mn and (0.01-0.99)/Co and (1)/P and (4)/O
      87622 (0.01-2)/LI
      6916 (0.5-0.95)/MN
      15183 (0.01-0.99)/CO
      815165 (1)/P
      2967528 (4)/O
L8      5 (0.01-2)/LI AND (0.5-0.95)/MN AND (0.01-0.99)/CO AND (1)/P AND
      (4)/O
```

```
=> file caplus
COST IN U.S. DOLLARS
FULL ESTIMATED COST
```

SINCE FILE	TOTAL
ENTRY	SESSION
157.98	158.19

FILE 'CAPLUS' ENTERED AT 15:30:39 ON 16 DEC 2002
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
 COPYRIGHT (C) 2002 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 16 Dec 2002 VOL 137 ISS 25
 FILE LAST UPDATED: 15 Dec 2002 (20021215/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS rôles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> s l3 or l7 or l8

71 L3

5 L7

3 L8

L9 71 L3 OR L7 OR L8

=> s l9 and battery

95641 BATTERY

L10 19 L9 AND BATTERY

=> d l10 ibib kwic 1-19

L10 ANSWER 1 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:904470 CAPLUS

DOCUMENT NUMBER: 137:372594

TITLE: Lithium transition-metal phosphate powder for rechargeable batteries

PATENT ASSIGNEE(S): N.V. Umicore S.A., Belg.; Centre National de la Recherche Scientifique

SOURCE: Eur. Pat. Appl., 15 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1261050	A1	20021127	EP 2001-401374	20010523
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
WO 2002099913	A1	20021212	WO 2002-EP5714	20020522
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRIORITY APPLN. INFO.: EP 2001-401374 A 20010523

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ST **battery** cathode lithium transition metal phosphate powder

IT **Battery** cathodes

(lithium transition-metal phosphate powder for rechargeable batteries)

IT 15365-14-7P, Iron lithium phosphate FeLiPO4 **475273-80-4P**

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(lithium transition-metal phosphate powder for rechargeable batteries)

L10 ANSWER 2 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:849980 CAPLUS

DOCUMENT NUMBER: 137:340029

TITLE: Method of forming phosphate powder particle compositions with complex anions for electrodes and batteries

INVENTOR(S): Chaloner-Gill, Benjamin; Pinoli, Allison A.; Horne, Craig R.; Mosso, Ronald J.; Bi, Xiangxin
PATENT ASSIGNEE(S): Neo Photonics Corporation, USA
SOURCE: PCT Int. Appl., 59 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002089233	A2	20021107	WO 2002-US12069	20020418

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2001-845985 A 20010430

ST **battery** electrode phosphate powder particle compn

IT **Battery** cathodes
Coating materials
IR lasers

(method of forming phosphate powder particle compns. with complex anions for electrodes and batteries)

IT 10045-86-0P, Ferric phosphate 14940-41-1P, Ferrous phosphate
15365-14-7P 474317-40-3P, Iron lithium phosphate (FeLi_{0.1-1}(PO₄))
474317-41-4P, Iron lithium manganese phosphate
(Fe_{0.2-1}LiMn_{0-0.8}(PO₄)) 474317-42-5P, Iron lithium manganese
phosphate (Fe_{0.2-0.6}LiMn_{0.4-0.8}(PO₄))

RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)

(method of forming phosphate powder particle compns. with complex anions for electrodes and batteries)

L10 ANSWER 3 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:505613 CAPLUS

DOCUMENT NUMBER: 137:355365

TITLE: Optimized LiMnyFel-yPO₄ as the cathode for lithium batteries

AUTHOR(S): Li, Guohua; Azuma, Hideto; Tohda, Masayuki

CORPORATE SOURCE: Nishi Battery Laboratories, Sony Corporation, Atsugi, 243-0021, Japan

SOURCE: Journal of the Electrochemical Society (2002), 149(6), A743-A747

CODEN: JESOCN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ST lithium manganese iron phosphate carbon black **battery** cathode;
rechargeable lithium **battery** cathode carbon lithium manganese
iron phosphate

IT **Battery** cathodes
(optimized high-manganese-content carbon black-contg. lithium manganese
iron phosphates as cathodes for rechargeable lithium batteries)

IT 15365-14-7, Iron lithium phosphate (FeLiPO₄) 213467-46-0, Iron lithium
manganese phosphate (FeLi₂Mn(PO₄)₂) 300858-61-1 371145-95-8

407629-83-8 **407640-52-2**, Iron lithium manganese phosphate
(Fe_{0.1-1}LiMn_{0-0.9}(PO₄)) 412351-36-1, Iron lithium manganese phosphate
(Fe_{0.9}LiMn_{0.1}(PO₄)) 464174-83-2 464174-90-1 **474902-99-3**,
Iron lithium manganese phosphate (Fe_{0.35}LiMn_{0.65}(PO₄)) **474903-00-9**
, Iron lithium manganese phosphate (Fe_{0.3}LiMn_{0.7}(PO₄)) **474903-03-2**
, Iron lithium manganese phosphate (Fe_{0.1}LiMn_{0.9}(PO₄)) 474903-04-3
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)

(cathode; optimized high-manganese-content carbon black-contg. lithium
manganese iron phosphates as cathodes for rechargeable lithium
batteries)

L10 ANSWER 4 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:454726 CAPLUS
DOCUMENT NUMBER: 137:281757
TITLE: Olivine-type cathodes for lithium batteries
AUTHOR(S): Yamada, A.; Hosoya, M.; Chung, S. C.; Hinokuma, K.;
Kudo, Y.; Liu, K. Y.
CORPORATE SOURCE: Frontier Science Laboratories, Sony Corporation,
Yokohama, 240-0036, Japan
SOURCE: Ceramic Transactions (2002), 127(Materials for
Electrochemical Energy Conversion and Storage),
189-203
CODEN: CETREW; ISSN: 1042-1122
PUBLISHER: American Ceramic Society
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ST **battery** cathodes iron lithium manganese phosphate

IT **Battery** cathodes

(olivine-type cathodes for lithium batteries)

IT 13826-59-0 15365-14-7 300858-61-1 407629-83-8 **464174-82-1**,
Iron lithium manganese phosphate ((Fe,Mn)Li₀₋₁(PO₄)) 464174-83-2
464174-90-1

RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)

(olivine-type cathodes for lithium batteries)

L10 ANSWER 5 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:368811 CAPLUS
DOCUMENT NUMBER: 136:357523
TITLE: Cathode active mass and **battery** using the
active mass
INVENTOR(S): Li, Guohua
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: PCT Int. Appl., 28 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002039523	A1	20020516	WO 2001-JP9747	20011107
W: CA, CN, KR, MX, US				
RW: DE, FI, FR, GB, SE				
JP 2002151072	A2	20020524	JP 2000-342410	20001109

PRIORITY APPLN. INFO.: JP 2000-342410 A 20001109

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Cathode active mass and **battery** using the active mass

AB The cathode active mass contains Li_{1+x}Mn_yFe_zPO₄ (0 < x < 0.1, 0.5 < y < 0.95,

0.9 <(y+z) .ltoreq.1. The **battery** is a secondary Li **battery**.

ST secondary **battery** cathode lithium manganese iron phosphate
IT **Battery** cathodes
(comps. of lithium iron manganese phosphate active mass for secondary lithium batteries)
IT **421766-60-1**, Iron lithium manganese phosphate (Fe_{0.05-0.5}Li_{1-1.1}Mn_{0.5-0.95}(PO₄)) **421766-61-2**, Iron lithium manganese phosphate (Fe_{0.27}Li_{1.03}Mn_{0.7}(PO₄)) **421766-62-3**, Iron lithium manganese phosphate (Fe_{0.25}Li_{1.05}Mn_{0.7}(PO₄)) **421766-63-4**, Iron lithium manganese phosphate (Fe_{0.22}Li_{1.03}Mn_{0.75}(PO₄)) **421766-64-5**, Iron lithium manganese phosphate (Fe_{0.2}Li_{1.05}Mn_{0.75}(PO₄)) **421766-65-6**, Iron lithium manganese phosphate (Fe_{0.25}Li_{1.03}Mn_{0.75}(PO₄))
RL: DEV (Device component use); USES (Uses)
(comps. of lithium iron manganese phosphate active mass for secondary lithium batteries)

L10 ANSWER 6 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:288922 CAPLUS |
DOCUMENT NUMBER: 137:219425
TITLE: 7Li and 31P magic angle spinning nuclear magnetic resonance of LiFePO₄-type materials
AUTHOR(S): Tucker, Michael C.; Doeff, Marca M.; Richardson, Thomas J.; Finones, Rita; Reimer, Jeffrey A.; Cairns, Elton J.
CORPORATE SOURCE: Energy and Environmental Technologies Division, Ernest Orlando Lawrence Berkeley National Laboratory and Department of Chemical Engineering, University of California Berkeley, Berkeley, CA, 94720, USA
SOURCE: Electrochemical and Solid-State Letters (2002), 5(5), A95-A98
CODEN: ESLEF6; ISSN: 1099-0062
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ST magic angle spinning NMR lithium phosphorus phosphate **battery** cathode; secondary **battery** cathode lithium iron magnesium phosphate magnetic susceptibility
IT **Battery** cathodes
MAS NMR spectroscopy
Magnetic susceptibility
Paramagnetic centers
Solid state secondary batteries
(Li and 31P magic angle spinning NMR of LiFePO₄-type materials)
IT **19414-36-9**, Iron lithium manganese phosphate ((Fe,Mn)Li(PO₄))
RL: TEM (Technical or engineered material use); USES (Uses)
(Li and 31P magic angle spinning NMR of LiFePO₄-type materials)

L10 ANSWER 7 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:272915 CAPLUS
DOCUMENT NUMBER: 136:297401
TITLE: Nonaqueous electrolyte **battery** with high discharge capacity
INVENTOR(S): Sakai, Hidecki; Fukushima, Yuzuru; Kuyama, Junji; Hosoya, Mamoru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 17 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195838	A2	20020410	EP 2001-123895	20011005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117908	A2	20020419	JP 2000-308303	20001006
CN 1348230	A	20020508	CN 2001-130350	20010930
US 2002150816	A1	20021017	US 2001-971912	20011005

PRIORITY APPLN. INFO.: JP 2000-308303 A 20001006

TI Nonaqueous electrolyte **battery** with high discharge capacity

ST **battery** nonaq electrolyte high discharge capacity

IT Secondary batteries
(lithium; nonaq. electrolyte **battery** with high discharge capacity)

IT **Battery** cathodes
(nonaq. electrolyte **battery** with high discharge capacity)

IT Carbon black, uses
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte **battery** with high discharge capacity)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte **battery** with high discharge capacity)

IT 7439-93-2, Lithium, uses 15365-14-7, Iron lithium phosphate felipo4
407606-22-8, Chromium iron lithium phosphate (Cr0.0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-24-0, Cobalt iron lithium phosphate (Co0.0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-26-2, Copper iron lithium phosphate (Cu0.0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-28-4, Aluminum iron lithium phosphate (Al0.0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-30-8, Gallium iron lithium phosphate (Ga0.0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-32-0, Boron iron lithium phosphate (B0.0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-34-2, Iron lithium manganese phosphate (Fe0.2-1Li0.05-1.2Mn0.0.8(PO4)) 407606-36-4, Iron lithium nickel phosphate (Fe0.2-1Li0.05-1.2Ni0.0.8(PO4)) 407606-39-7, Iron lithium vanadium phosphate (Fe0.2-1Li0.05-1.2V0.0.8(PO4)) 407606-42-2, Iron lithium molybdenum phosphate (Fe0.2-1Li0.05-1.2Mo0.0.8(PO4)) 407606-44-4, Iron lithium titanium phosphate (Fe0.2-1Li0.05-1.2Ti0.0.8(PO4)) 407606-47-7, Iron lithium zinc phosphate (Fe0.2-1Li0.05-1.2Zn0.0.8(PO4)) 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0.0.8(PO4)) 407606-51-3, Iron lithium niobium phosphate (Fe0.2-1Li0.05-1.2Nb0.0.8(PO4)) 407629-83-8 407629-87-2 407629-90-7 407629-95-2 407630-01-7 407630-05-1 407630-10-8 407630-14-2 407630-25-5, Aluminum iron lithium phosphate (Al0.7Fe0.3Li(PO4)) 407630-29-9, Gallium iron lithium phosphate (Ga0.7Fe0.3Li(PO4)) 407630-35-7 407630-40-4, Boron iron lithium phosphate (B0.75Fe0.25Li(PO4)) 408501-54-2
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte **battery** with high discharge capacity)

L10 ANSWER 8 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:272914 CAPLUS

DOCUMENT NUMBER: 136:297400

TITLE: Nonaqueous electrolyte secondary **battery**
using olivinic lithium phosphorus oxide cathode active materialINVENTOR(S): Okawa, Tsuyoshi; Hosoya, Mamoru; Kuyama, Junji;
Fukushima, Yuzuru

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 15 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195837	A2	20020410	EP 2001-123893	20011005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117907	A2	20020419	JP 2000-308302	20001006
CN 1350342	A	20020522	CN 2001-139303	20010930
US 2002106563	A1	20020808	US 2001-972375	20011005

PRIORITY APPLN. INFO.:

JP 2000-308302 A 20001006

- TI Nonaqueous electrolyte secondary **battery** using olivinic lithium phosphorus oxide cathode active material
- AB In a **battery**, liq. leakage or destruction may be prevented as the apparent energy d. per unit vol. of the cell is maintained. The cell uses, as a cathode active material, a compd. of an olivinic crystal structure having the formula $\text{Li}_x\text{Fe}_{1-x}\text{MPO}_4$, where M is at least one selected from the group of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb and 0.05 $\leq x \leq 1.2$ and 0 $\leq y \leq 0.8$. By adjusting the amt. of the electrolyte soln., the amt. of the void in the container is set so as to be not less than 0.14 mL and not more than 3.3 mL per 1 Ah of the cell capacity.
- ST **battery** olivinic lithium phosphorus oxide cathode; nonaq electrolyte lithium secondary **battery**
- IT Secondary batteries
(lithium; nonaq. electrolyte secondary **battery** using olivinic lithium phosphorus oxide cathode active material)
- IT **Battery** cathodes
Composites
(nonaq. electrolyte secondary **battery** using olivinic lithium phosphorus oxide cathode active material)
- IT Coke
RL: DEV (Device component use); USES (Uses)
(pitch; nonaq. electrolyte secondary **battery** using olivinic lithium phosphorus oxide cathode active material)
- IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7440-44-0, Carbon, uses 15365-14-7, Iron lithium phosphate FeLiPO_4 21324-40-3, Lithium hexafluorophosphate 407606-22-8, Chromium iron lithium phosphate ($\text{Cr}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$) 407606-24-0, Cobalt iron lithium phosphate ($\text{Co}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$) 407606-26-2, Copper iron lithium phosphate ($\text{Cu}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$) 407606-28-4, Aluminum iron lithium phosphate ($\text{Al}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$) 407606-30-8, Gallium iron lithium phosphate ($\text{Ga}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$) 407606-32-0, Boron iron lithium phosphate ($\text{B}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$) 407606-34-2, Iron lithium manganese phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mn}_{0.8}\text{PO}_4$) 407606-36-4, Iron lithium nickel phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Ni}_{0.8}\text{PO}_4$) 407606-39-7, Iron lithium vanadium phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{V}_{0.8}\text{PO}_4$) 407606-42-2, Iron lithium molybdenum phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mo}_{0.8}\text{PO}_4$) 407606-44-4, Iron lithium titanium phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Ti}_{0.8}\text{PO}_4$) 407606-47-7, Iron lithium zinc phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Zn}_{0.8}\text{PO}_4$) 407606-49-9, Iron lithium magnesium phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mg}_{0.8}\text{PO}_4$) 407606-51-3, Iron lithium niobium phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Nb}_{0.8}\text{PO}_4$) 407629-83-8 407629-87-2 407629-90-7 407629-95-2 407630-01-7 407630-05-1 407630-10-8 407630-14-2 407630-19-7 407630-25-5, Aluminum iron lithium phosphate ($\text{Al}_{0.7}\text{Fe}_{0.3}\text{LiPO}_4$) 407630-29-9, Gallium iron lithium phosphate ($\text{Ga}_{0.7}\text{Fe}_{0.3}\text{LiPO}_4$) 407630-35-7 407630-40-4, Boron iron lithium phosphate ($\text{B}_{0.75}\text{Fe}_{0.25}\text{LiPO}_4$) 407630-46-0
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte secondary **battery** using olivinic lithium phosphorus oxide cathode active material)

DOCUMENT NUMBER: 136:297398
 TITLE: Cathode and anode materials for solid nonaqueous electrolyte **battery**
 INVENTOR(S): Takahashi, Kimio; Hosoya, Mamoru; Miyake, Masami
 PATENT ASSIGNEE(S): Sony Corporation, Japan
 SOURCE: Eur. Pat. Appl., 22 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195835	A2	20020410	EP 2001-123773	20011004
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117902	A2	20020419	JP 2000-306877	20001005
CN 1348231	A	20020508	CN 2001-138524	20010930

PRIORITY APPLN. INFO.: JP 2000-306877 A 20001005

TI Cathode and anode materials for solid nonaqueous electrolyte **battery**

AB A **battery** is not deteriorated in cell characteristics and maintains the cell shape encapsulated in a laminate film even when overdischarged to a cell voltage of 0 V. The cell includes a cathode contg. a compd. having the formula $\text{Li}_x\text{Fe}_{1-y}\text{M}_y\text{PO}_4$, where M is at least one selected from the group consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb, with $0.05 \leq x \leq 1.2$ and $0 \leq y \leq 0.8$, an anode and a solid electrolyte. A cell member comprised of the cathode and the anode, layered together with the interposition of a solid electrolyte, is encapsulated in a laminate film.

ST **battery** solid nonaq electrolyte cathode anode material

IT **Battery** anodes

Battery cathodes

Battery electrolytes

(cathode and anode materials for solid nonaq. electrolyte **battery**)

IT 7440-44-0, Carbon, uses 15365-14-7, Iron lithium phosphate FeLiPO_4
 407606-22-8, Chromium iron lithium phosphate ($\text{Cr}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$)
 407606-24-0, Cobalt iron lithium phosphate ($\text{Co}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$)
 407606-26-2, Copper iron lithium phosphate ($\text{Cu}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$)
 407606-28-4, Aluminum iron lithium phosphate ($\text{Al}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$)
 407606-30-8, Gallium iron lithium phosphate ($\text{Ga}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$)
 407606-32-0, Boron iron lithium phosphate ($\text{B}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{PO}_4$)
 407606-34-2, Iron lithium manganese phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mn}_{0.8}\text{PO}_4$)
 407606-36-4, Iron lithium nickel phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Ni}_{0.8}\text{PO}_4$)
 407606-39-7, Iron lithium vanadium phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{V}_{0.8}\text{PO}_4$)
 407606-42-2, Iron lithium molybdenum phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mo}_{0.8}\text{PO}_4$)
 407606-44-4, Iron lithium titanium phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Ti}_{0.8}\text{PO}_4$)
 407606-47-7, Iron lithium zinc phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Zn}_{0.8}\text{PO}_4$)
 407606-49-9, Iron lithium magnesium phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mg}_{0.8}\text{PO}_4$)
 407606-51-3, Iron lithium niobium phosphate ($\text{Fe}_{0.2}\text{Li}_{0.05}\text{Nb}_{0.8}\text{PO}_4$)

RL: DEV (Device component use); USES (Uses)

(cathode and anode materials for solid nonaq. electrolyte **battery**)

IT 7439-93-2, Lithium, uses

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(cathode and anode materials for solid nonaq. electrolyte **battery**)

L10 ANSWER 10 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:272909 CAPLUS

DOCUMENT NUMBER: 136:297395

TITLE: Method for fabrication of cathode active material and a nonaqueous electrolyte **battery**

INVENTOR(S): Hosoya, Mamoru; Fukushima, Yuzuru; Sakai, Hidecki; Kuyama, Junji

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 31 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195827	A2	20020410	EP 2001-123894	20011005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117848	A2	20020419	JP 2000-308300	20001006
JP 2002117849	A2	20020419	JP 2000-308313	20001006
US 2002124386	A1	20020912	US 2001-966918	20010928
CN 1360353	A	20020724	CN 2001-138169	20010930

PRIORITY APPLN. INFO.: JP 2000-308300 A 20001006
JP 2000-308313 A 20001006

TI Method for fabrication of cathode active material and a nonaqueous electrolyte **battery**

ST cathode active material nonaq electrolyte **battery**

IT Ball milling

Battery cathodes

Composites

Secondary batteries

(method for fabrication of cathode active material and nonaq. electrolyte **battery**)

IT Carbon black, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(method for fabrication of cathode active material and nonaq. electrolyte **battery**)

IT 7440-44-0, Carbon, uses 198782-39-7, Iron lithium phosphate (FeLiO-1(PO₄)) 407606-22-8, Chromium iron lithium phosphate (CrO-0.8FeO.2-1LiO.05-1.2(PO₄)) 407606-24-0, Cobalt iron lithium phosphate (CoO-0.8FeO.2-1LiO.05-1.2(PO₄)) 407606-26-2, Copper iron lithium phosphate (CuO-0.8FeO.2-1LiO.05-1.2(PO₄)) 407606-28-4, Aluminum iron lithium phosphate (AlO-0.8FeO.2-1LiO.05-1.2(PO₄)) 407606-30-8, Gallium iron lithium phosphate (GaO-0.8FeO.2-1LiO.05-1.2(PO₄)) 407606-32-0, Boron iron lithium phosphate (BO-0.8FeO.2-1LiO.05-1.2(PO₄)) 407606-34-2, Iron lithium manganese phosphate (FeO.2-1LiO.05-1.2MnO-0.8(PO₄)) 407606-36-4, Iron lithium nickel phosphate (FeO.2-1LiO.05-1.2NiO-0.8(PO₄)) 407606-39-7, Iron lithium vanadium phosphate (FeO.2-1LiO.05-1.2VO-0.8(PO₄)) 407606-42-2, Iron lithium molybdenum phosphate (FeO.2-1LiO.05-1.2MoO-0.8(PO₄)) 407606-44-4, Iron lithium titanium phosphate (FeO.2-1LiO.05-1.2TiO-0.8(PO₄)) 407606-47-7, Iron lithium zinc phosphate (FeO.2-1LiO.05-1.2ZnO-0.8(PO₄)) 407606-49-9, Iron lithium magnesium phosphate (FeO.2-1LiO.05-1.2MgO-0.8(PO₄)) 407606-51-3, Iron lithium niobium phosphate (FeO.2-1LiO.05-1.2NbO-0.8(PO₄)) 407629-87-2 407629-90-7 407629-95-2 407630-01-7 407630-10-8 407630-14-2

RL: DEV (Device component use); USES (Uses)

(method for fabrication of cathode active material and nonaq. electrolyte **battery**)

IT 15365-14-7P, Iron lithium phosphate FeLiPO₄

RL: DEV (Device component use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)

(method for fabrication of cathode active material and nonaq.
electrolyte **battery**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
RL: MOA (Modifier or additive use); USES (Uses)
(method for fabrication of cathode active material and nonaq.
electrolyte **battery**)

L10 ANSWER 11 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:272908 CAPLUS

DOCUMENT NUMBER: 136:297394

TITLE: Solid electrolyte cell

INVENTOR(S): Goto, Shuji; Hosoya, Mamoru; Endo, Takahiro

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195826	A2	20020410	EP 2001-123774	20011004
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117844	A2	20020419	JP 2000-306876	20001005
US 2002094481	A1	20020718	US 2001-966864	20010928
CN 1349273	A	20020515	CN 2001-139323	20010930

PRIORITY APPLN. INFO.: JP 2000-306876 A 20001005

ST **battery** solid electrolyte

IT **Battery** cathodes

Secondary batteries

(solid electrolyte cell)

IT 7439-93-2D, Lithium, polyethylene oxide complex 7791-03-9, Lithium perchlorate 12031-65-1, Lithium nickel oxide linio2 12057-17-9, Lithium manganese oxide limn2o4 15365-14-7, Iron lithium phosphate felipo4 25322-68-3D, Polyethylene oxide, lithium complex 116327-69-6, Cobalt lithium nickel oxide Co0.1LiNi0.9O2 147812-18-8, Iron lithium manganese oxide Fe0.05LiMn1.95O4 407606-22-8, Chromium iron lithium phosphate (Cr0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-24-0, Cobalt iron lithium phosphate (Co0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-26-2, Copper iron lithium phosphate (Cu0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-28-4, Aluminum iron lithium phosphate (Al0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-30-8, Gallium iron lithium phosphate (Ga0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-32-0, Boron iron lithium phosphate (B0-0.8Fe0.2-1Li0.05-1.2(PO4)) **407606-34-2**, Iron lithium manganese phosphate (Fe0.2-1Li0.05-1.2Mn0-0.8(PO4)) 407606-36-4, Iron lithium nickel phosphate (Fe0.2-1Li0.05-1.2Ni0-0.8(PO4)) 407606-39-7, Iron lithium vanadium phosphate (Fe0.2-1Li0.05-1.2V0-0.8(PO4)) 407606-42-2, Iron lithium molybdenum phosphate (Fe0.2-1Li0.05-1.2Mo0-0.8(PO4)) 407606-44-4, Iron lithium titanium phosphate (Fe0.2-1Li0.05-1.2Ti0-0.8(PO4)) 407606-47-7, Iron lithium zinc phosphate (Fe0.2-1Li0.05-1.2Zn0-0.8(PO4)) 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(PO4)) 407606-51-3, Iron lithium niobium phosphate (Fe0.2-1Li0.05-1.2Nb0-0.8(PO4)) 408331-94-2, Cobalt lithium nickel oxide ((Co,Ni)Li0-2O2) 408331-95-3, Cobalt lithium manganese oxide ((Co,Mn)Li0-2O2) 408331-96-4, Cobalt lithium zinc oxide ((Co,Zn)Li0-2O2) 408331-97-5, Cobalt lithium tin oxide ((Co,Sn)Li0-2O2) 408331-99-7, Cobalt lithium vanadium oxide ((Co,V)Li0-2O2) 408332-00-3, Cobalt lithium titanium oxide ((Co,Ti)Li0-2O2) 408332-01-4, Cobalt lithium molybdenum oxide ((Co,Mo)Li0-2O2) 408332-02-5, Cobalt lithium tungsten oxide ((Co,W)Li0-2O2) 408332-03-6, Cobalt lithium magnesium oxide ((Co,Mg)Li0-2O2) 408332-04-7, Cobalt lithium strontium oxide

((Co,Sr)LiO-2O2) 408332-05-8, Cobalt lithium niobium oxide
 ((Co,Nb)LiO-2O2) 408332-06-9, Cobalt iron lithium oxide ((Co,Fe)LiO-2O2)
 408332-07-0, Cobalt copper lithium oxide ((Co,Cu)LiO-2O2) 408332-08-1,
 Aluminum cobalt lithium oxide ((Al,Co)LiO-2O2) 408332-09-2, Cobalt
 lithium borate oxide (CoO-1LiO-2(BO2)O-1O0-2) 408332-10-5, Cobalt
 gallium lithium oxide ((Co,Ga)LiO-2O2) 408332-11-6, Chromium cobalt
 lithium oxide ((Cr,Co)LiO-2O2) 408332-12-7, Calcium cobalt lithium oxide
 ((Ca,Co)LiO-2O2) 408332-13-8, Iron lithium nickel oxide ((Fe,Ni)LiO-2O2)
 408332-14-9, Copper lithium nickel oxide ((Cu,Ni)LiO-2O2) 408332-15-0,
 Aluminum lithium nickel oxide ((Al,Ni)LiO-2O2) 408332-16-1, Lithium
 nickel borate oxide (LiO-2NiO-1(BO2)O-1O0-2) 408332-17-2, Gallium
 lithium nickel oxide ((Ga,Ni)LiO-2O2) 408332-18-3, Chromium lithium
 nickel oxide ((Cr,Ni)LiO-2O2) 408332-19-4, Calcium lithium nickel oxide
 ((Ca,Ni)LiO-2O2) 408332-20-7, Lithium manganese nickel oxide
 (LiO-2(Mn,Ni)O2) 408332-21-8, Lithium nickel zinc oxide (LiO-2(Ni,Zn)O2)
 408332-22-9, Lithium nickel tin oxide (LiO-2(Ni,Sn)O2) 408332-23-0,
 Lithium nickel vanadium oxide (LiO-2(Ni,V)O2) 408332-24-1, Lithium
 nickel titanium oxide (LiO-2(Ni,Ti)O2) 408332-25-2, Lithium nickel
 tungsten oxide (LiO-2(Ni,W)O2) 408332-26-3, Lithium molybdenum nickel
 oxide (LiO-2(Mo,Ni)O2) 408332-27-4, Lithium magnesium nickel oxide
 (LiO-2(Mg,Ni)O2) 408332-28-5, Lithium nickel strontium oxide
 (LiO-2(Ni,Sr)O2) 408332-29-6, Lithium nickel niobium oxide
 (LiO-2(Ni,Nb)O2) 408332-30-9, Lithium manganese nickel oxide
 (LiO-2(Mn,Ni)2O4) 408332-31-0, Lithium manganese zinc oxide
 (LiO-2(Mn,Zn)2O4) 408332-32-1, Lithium manganese tin oxide
 (LiO-2(Mn,Sn)2O4) 408332-33-2, Lithium manganese vanadium oxide
 (LiO-2(Mn,V)2O4) 408332-34-3, Lithium manganese titanium oxide
 (LiO-2(Mn,Ti)2O4) 408332-35-4, Lithium manganese molybdenum oxide
 (LiO-2(Mn,Mo)2O4) 408332-36-5, Lithium manganese tungsten oxide
 (LiO-2(Mn,W)2O4) 408332-37-6, Lithium magnesium manganese oxide
 (LiO-2(Mg,Mn)2O4) 408332-38-7, Lithium manganese strontium oxide
 (LiO-2(Mn,Sr)2O4) 408332-39-8, Lithium manganese niobium oxide
 (LiO-2(Mn,Nb)2O4) 408332-40-1, Iron lithium manganese oxide
 ((Fe,Mn)2LiO-2O4) 408332-42-3, Cobalt lithium manganese oxide
 ((Co,Mn)2LiO-2O4) 408332-44-5, Aluminum lithium manganese oxide
 ((Al,Mn)2LiO-2O4) 408332-45-6, Lithium manganese borate oxide
 (LiO-2MnO-2(BO2)O-2O0-4) 408332-46-7, Gallium lithium manganese oxide
 ((Ga,Mn)2LiO-2O4) 408332-47-8, Chromium lithium manganese oxide
 ((Cr,Mn)2LiO-2O4) 408332-48-9, Calcium lithium manganese oxide
 ((Ca,Mn)2LiO-2O4) 408332-58-1, Aluminum cobalt lithium nickel oxide
 (Al0.01Co0.98LiNi0.01O2) 412351-36-1, Iron lithium manganese phosphate
 (Fe0.9LiMn0.1(PO4))

RL: DEV (Device component use); USES (Uses)
 (solid electrolyte cell)

L10 ANSWER 12 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:256645 CAPLUS

DOCUMENT NUMBER: 136:297382

TITLE: Carbon-coated or carbon-crosslinked redox materials
 with transition metal-lithium oxide core for use as
battery electrodes

INVENTOR(S): Armand, Michel; Gauthier, Michel; Magnan,
 Jean-Francois; Ravet, Nathalie

PATENT ASSIGNEE(S): Hydro-Quebec, Can.

SOURCE: PCT Int. Appl., 78 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002027824	AI	20020404	WO 2001-CA1350	20010921

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
 PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
 US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2001093569 A5 20020408 AU 2001-93569 20010921

PRIORITY APPLN. INFO.: CA 2000-2320661 A 20000926

WO 2001-CA1350 W 20010921

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

- TI Carbon-coated or carbon-crosslinked redox materials with transition
 metal-lithium oxide core for use as **battery** electrodes
- AB Carbon-coated redox materials suitable for use in **battery**
 electrodes consist of a core surrounded by a coating, or interconnected by
 carbon crosslinks, in which the core includes a compn. of formula
 LixM1-yM'y(XO4)n , in which $y = 0-0.6$, $x = 0-2$, $n = 0-1.5$; M is a
 transition metal; and M' is a element of fixed valence selected from Mg^{2+} ,
 Ca^{2+} , Al^{3+} , and Zn^{2+} , and X is S, P, and Si. Synthesis of the materials
 is carried out by reacting a balanced mixt. of appropriate precursors in a
 reducing atm., to adjust the valence of the transition metals, in the
 presence of a carbon source, which is then pyrolyzed. The resulting
 products exhibit an excellent elec. cond. and a highly enhanced chem.
 activity.
- ST carbon encapsulated redox material **battery** electrode; cathode
battery carbon coated redox material
- IT Silanes
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (alkoxy, silicon source; carbon-coated or carbon-crosslinked redox
 materials with transition metal-lithium oxide core for use as
battery electrodes)
- IT Polyoxyalkylenes, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (alkyl ethers, oligomeric, aprotic solvent; carbon-coated or
 carbon-crosslinked redox materials with transition metal-lithium oxide
 core for use as **battery** electrodes)
- IT Fluoropolymers, uses
 Polyesters, uses
 Polyethers, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (binders; carbon-coated or carbon-crosslinked redox materials with
 transition metal-lithium oxide core for use as **battery**
 electrodes)
- IT **Battery** cathodes
Battery electrodes
 Redox agents
 (carbon-coated or carbon-crosslinked redox materials with transition
 metal-lithium oxide core for use as **battery** electrodes)
- IT Transition metals, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (electrodes contg.; carbon-coated or carbon-crosslinked redox materials
 with transition metal-lithium oxide core for use as **battery**
 electrodes)
- IT 78-93-3, Methyl ethyl ketone, uses 96-48-0, Butyrolactone 96-49-1,
 Ethylene carbonate 107-21-1D, Ethylene glycol, alkyl ethers 108-32-7,
 Propylene carbonate 111-46-6D, Diethylene glycol, alkyl ethers
 112-27-6D, Triethylene glycol, alkyl ethers 112-60-7D, Tetraethylene
 glycol, alkyl ethers 463-79-6D, Carbonic acid, C1-4-alkyl esters
 RL: NUU (Other use, unclassified); USES (Uses)
 (aprotic solvent; carbon-coated or carbon-crosslinked redox materials
 with transition metal-lithium oxide core for use as **battery**

electrodes)

IT 9011-14-7, Poly(methyl methacrylate) 24937-79-9, Poly(vinylidene difluoride) 25014-41-9, Polyacrylonitrile
 RL: NUU (Other use, unclassified); USES (Uses)
 (binders; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)

IT 50-99-7, Glucose, reactions 57-48-7, Fructose, reactions 57-50-1, Sucrose, reactions 58-86-6, Xylose, reactions 87-79-6, Sorbose 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9004-34-6, Cellulose, reactions 9004-34-6D, Cellulose, esters 9004-35-7, Cellulose acetate 9005-25-8, Starch, reactions 25212-86-6, Poly(furfuryl alcohol) 43094-71-9, Ethylene-ethylene oxide copolymer
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carbon source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)

IT 407640-63-5, Iron lithium titanium phosphate sulfate ($\text{Fe}_{0.85}\text{Li}_{1.35}\text{Ti}_{0.15}(\text{PO}_4)_0.5(\text{SO}_4)$)
 RL: DEV (Device component use); USES (Uses)
 (electrodes contg.; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)

IT 7439-89-6D, Iron, mixed oxides 7439-96-5D, Manganese, mixed oxides 7440-02-0D, Nickel, mixed oxides 7440-32-6D, Titanium, mixed oxides 7440-47-3D, Chromium, mixed oxides 7440-48-4D, Cobalt, mixed oxides 7440-50-8D, Copper, mixed oxides 7440-62-2D, Vanadium, mixed oxides 13816-45-0, Triphylite 15365-14-7, Iron lithium phosphate (FeLiPO_4) 213467-46-0, Iron lithium manganese phosphate ($\text{FeLi}_2\text{Mn}(\text{PO}_4)_2$)
 RL: TEM (Technical or engineered material use); USES (Uses)
 (electrodes contg.; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)

IT 90076-65-6
 RL: NUU (Other use, unclassified); USES (Uses)
 (electrolyte contg.; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)

IT 516-03-0, Ferrous oxalate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (iron source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)

IT 7429-90-5, Aluminum, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-66-6, Zinc, uses 7782-42-5, Graphite, uses 39302-37-9, Lithium titanate 207803-50-7, Aluminum cobalt lithium magnesium nickel oxide 258511-24-9, Iron lithium nitride 263898-18-6, Cobalt manganese nitride 407640-62-4
 RL: DEV (Device component use); USES (Uses)
 (lithium-based cathodes contg.; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)

IT 638-38-0, Manganese(II) acetate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (manganese source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)

IT 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1309-37-1, Ferric oxide, reactions 1310-65-2, Lithium hydroxide 1313-13-9, Manganese dioxide, reactions 1314-62-1, Vanadium pentoxide, reactions 1317-61-9, Magnetite, reactions 10045-86-0, Ferric phosphate 10102-24-6, Lithium silicate (Li_2SiO_3) 10377-48-7, Lithium sulfate 10377-52-3, Lithium phosphate (Li_3PO_4) 10421-48-4, Ferric nitrate 12057-24-8, Lithium oxide, reactions 12627-14-4

13453-80-0, Lithium dihydrogen phosphate 63985-45-5, Lithium orthosilicate **407640-52-2**, Iron lithium manganese phosphate (Fe_{0.1}-1LiMn_{0.9}(PO₄)) 407640-53-3, Iron lithium magnesium phosphate (Fe_{0.7}-1LiMg_{0.3}(PO₄)) 407640-54-4, Calcium iron lithium phosphate (Ca_{0.3}Fe_{0.7}-1Li(PO₄)) **407640-55-5** 407640-56-6, Iron lithium phosphate silicate (FeLi₁-1.9(PO₄)_{0.1}-1(SiO₄)_{0.9}) 407640-57-7 407640-58-8, Iron lithium manganese phosphate sulfate (Fe₀-1Li₁-1.2Mn₀-0.2[(PO₄), (SO₄)]) **407640-59-9**, Iron lithium manganese phosphate ((Fe,Mn)Li₁-1.6(PO₄)) **407640-60-2**, Iron lithium manganese phosphate sulfate (Fe₁-2Li₁-2Mn₀-1[(PO₄), (SO₄)]) 407640-61-3, Iron lithium titanium phosphate ((Fe,Ti)Li_{0.5}-2(PO₄)_{1.5})
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (metal source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)
 IT 25322-68-3D, Polyethylene glycol, alkyl ethers
 RL: NUU (Other use, unclassified); USES (Uses)
 (oligomeric, aprotic solvent; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)
 IT 7664-38-2, Phosphoric acid, reactions 7664-38-2D, Phosphoric acid, esters 7783-28-0, Ammonium hydrogen phosphate 10124-54-6, Manganese phosphate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (phosphorus source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)
 IT 7631-86-9, Silica, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (silicon source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)
 IT 7664-93-9, Sulfuric acid, reactions 7783-20-2, Ammonium sulfate, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (sulfur source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as **battery** electrodes)

L10 ANSWER 13 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:796403 CAPLUS

DOCUMENT NUMBER: 135:346864

TITLE: Cathode for nonaqueous electrolyte lithium ion **battery**

INVENTOR(S): Yamada, Atsuo; Yamahira, Takayuki

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 26 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP <u>1150368</u>	A2	<u>20011031</u>	EP 2001-109919	20010424
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001307730	A2	20011102	JP 2000-128998	20000425
CA 2344981	AA	20011025	CA 2001-2344981	20010425
CN 1320976	A	20011107	CN 2001-117211	20010425
US <u>2002004169</u>	A1	20020110	US 2001-842485	20010425
PRIORITY APPLN. INFO.:			JP 2000-128998	A 20000425

TI Cathode for nonaqueous electrolyte lithium ion **battery**

IT Charcoal
 RL: DEV (Device component use); USES (Uses)
 (activated; cathode for nonaq. electrolyte lithium ion **battery**)

IT **Battery** cathodes
 (cathode for nonaq. electrolyte lithium ion **battery**)

IT Carbon fibers, uses
 Carbonaceous materials (technological products)
 Coke
 Petroleum coke
 RL: DEV (Device component use); USES (Uses)
 (cathode for nonaq. electrolyte lithium ion **battery**)

IT Carbon black, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (cathode for nonaq. electrolyte lithium ion **battery**)

IT Fluoropolymers, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (cathode for nonaq. electrolyte lithium ion **battery**)

IT Organic compounds, uses
 RL: DEV (Device component use); USES (Uses)
 (high mol., sintered; cathode for nonaq. electrolyte lithium ion **battery**)

IT Secondary batteries
 (lithium; cathode for nonaq. electrolyte lithium ion **battery**)

IT Coke
 RL: DEV (Device component use); USES (Uses)
 (needle; cathode for nonaq. electrolyte lithium ion **battery**)

IT Coke
 RL: DEV (Device component use); USES (Uses)
 (pitch; cathode for nonaq. electrolyte lithium ion **battery**)

IT Furan resins
 Phenolic resins, uses
 RL: DEV (Device component use); USES (Uses)
 (sintered and carbonized; cathode for nonaq. electrolyte lithium ion **battery**)

IT 50-21-5D, Lactic acid, ester 60-29-7, Diethyl ether, uses 64-19-7D,
 Acetic acid, ester, uses 75-05-8, Acetonitrile, uses 79-09-4D,
 Propionic acid, ester 96-47-9, 2-Methyltetrahydrofuran 96-48-0
 96-49-1, Ethylene carbonate 100-66-3, Anisole, uses 105-58-8, Diethyl
 carbonate 107-12-0, Propionitrile 108-32-7, Propylene carbonate
 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane
 409-21-2, Silicon carbide sic, uses 554-12-1, Methyl propionate
 616-38-6, Dimethyl carbonate 623-42-7, Methyl butyrate 623-96-1,
 Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0,
 1,3-Dioxolane 872-36-6, Vinylene carbonate 1072-47-5,
 4-Methyl-1,3-dioxolane 1313-08-2 2550-62-1, Lithium methanesulfonate
 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses 7440-50-8,
 Copper, uses 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium
 bromide 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate
 9003-07-0, Polypropylene 12007-81-7, Silicon tetraboride 12008-29-6,
 Silicon hexaboride 12013-56-8, Calcium disilicide 12017-12-8, Cobalt
 disilicide 12018-09-6, Chromium disilicide 12022-99-0, Iron disilicide
 12032-86-9, Manganese disilicide 12033-76-0, Silicon nitride oxide
 Si₂N₂O 12033-89-5, Silicon nitride, uses 12034-80-9, Niobium
 disilicide 12039-79-1, Tantalum disilicide 12039-83-7, Titanium
 silicide TiSi₂ 12039-87-1, Vanadium disilicide 12039-88-2, Tungsten
 disilicide 12059-14-2, Nickel silicide (Ni₂Si) 12136-78-6, Molybdenum
 disilicide 12159-07-8, Copper silicide Cu₅Si 12190-79-3, Cobalt
 lithium oxide CoLiO₂ 12201-89-7, Nickel disilicide 14283-07-9, Lithium
 tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15365-14-7,
 Iron lithium phosphate FeLiPO₄ 19414-36-9, Iron lithium
 manganese phosphate ((Fe,Mn)Li(PO₄)) 21324-40-3, Lithium
 hexafluorophosphate 22831-39-6, Magnesium silicide (Mg₂Si) 29935-35-1,
 Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate

35678-71-8, Methylsulfolane 90076-65-6 113066-89-0, Cobalt lithium
nickel oxide $\text{Co}_0.2\text{LiNi}_0.8\text{O}_2$ 113671-38-8, Silicon oxide SiO_2
160479-36-7, Lithium tin oxide 178958-56-0, Lithium silicon oxide
300858-61-1 339333-78-7, Zinc silicide ZnSi_2 371148-86-6, Tin oxide
(SnO_2) 371148-87-7, Lithium magnesium manganese oxide ($\text{LiMg}_0.2\text{Mn}_0.8\text{O}_2$)
RL: DEV (Device component use); USES (Uses)

(cathode for nonaq. electrolyte lithium ion **battery**)

IT 24937-79-9, PvdF

RL: TEM (Technical or engineered material use); USES (Uses)

(cathode for nonaq. electrolyte lithium ion **battery**)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)

(pyrocarbon; cathode for nonaq. electrolyte lithium ion **battery**)

)

L10 ANSWER 14 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:796402 CAPLUS

DOCUMENT NUMBER: 135:346863

TITLE: Cathode active material for nonaqueous electrolyte
battery

INVENTOR(S): Li, Guohua; Yamada, Atsuo

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 47 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1150367	A2	20011031	EP 2001-109945	20010424
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001307731	A2	20011102	JP 2000-128999	20000425
JP 2001307732	A2	20011102	JP 2000-129000	20000425
CA 2344903	AA	20011025	CA 2001-2344903	20010423
CN 1322023	A	20011114	CN 2001-121243	20010425
US 2001055718	A1	20011227	US 2001-842483	20010425

PRIORITY APPLN. INFO.:

JP 2000-128999 A 20000425

JP 2000-129000 A 20000425

TI Cathode active material for nonaqueous electrolyte **battery**

ST cathode active material nonaq electrolyte **battery**

IT **Battery** cathodes

(cathode active material for nonaq. electrolyte **battery**)

IT Carbon black, uses

RL: MOA (Modifier or additive use); USES (Uses)

(cathode active material for nonaq. electrolyte **battery**)

IT Fluoropolymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(cathode active material for nonaq. electrolyte **battery**)

IT Secondary batteries

(lithium; cathode active material for nonaq. electrolyte
battery)

IT 108-32-7, Propylene carbonate 616-38-6, Dimethylcarbonate 7429-90-5,
Aluminum, uses 21324-40-3, Lithium hexafluorophosphate
371145-93-6, Iron lithium manganese phosphate ($\text{Fe}_{0.05}\text{-0.5Li}_{0.5}\text{-2Mn}_{0.5}\text{-0.95(PO}_4\text{)}$)

RL: DEV (Device component use); USES (Uses)

(cathode active material for nonaq. electrolyte **battery**)

IT 207462-44-0P 300858-61-1P 371145-94-7P 371145-95-8P

371145-97-0P 371145-99-2P 371146-01-9P 371146-06-4P

371146-11-1P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)
 (cathode active material for nonaq. electrolyte **battery**)
 IT 24937-79-9, PvdF
 RL: TEM (Technical or engineered material use); USES (Uses)
 (cathode active material for nonaq. electrolyte **battery**)

L10 ANSWER 15 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:710111 CAPLUS

DOCUMENT NUMBER: 135:275341

TITLE: New lithium insertion electrode materials based on orthosilicate derivatives, electrochemical generators, and variable optical transmission devices having electrodes containing these materials

INVENTOR(S): Armand, Michel; Michot, Christophe; Ravet, Nathalie; Simoneau, Martin; Hovington, Pierre

PATENT ASSIGNEE(S): Hydro-Quebec, Can.; Centre National de la Recherche Scientifique (CNRS); Universite de Montreal

SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	JP 2001266882	A2	2001-09-28	JP 2000-117248	20000314
ST	lithium battery cathode manganese iron orthosilicate; transition metal silicate cathode lithium battery ; optical transmission device electrode transition metal silicate; supercapacitor electrode metal orthosilicate				
IT	Battery cathodes (Li-intercalatable transition metal orthosilicates as Li battery cathodes or variable optical transmission device electrodes)				
IT	Optical transmission (devices; Li-intercalatable transition metal orthosilicates as Li battery cathodes or variable optical transmission device electrodes)				
IT	Primary batteries Secondary batteries (lithium; Li-intercalatable transition metal orthosilicates as Li battery cathodes or variable optical transmission device electrodes)				
IT	Capacitors (super; Li-intercalatable transition metal orthosilicates as Li battery cathodes or variable optical transmission device electrodes or supercapacitor electrodes)				
IT	363141-29-1P RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses) (cathodes; Li-intercalatable transition metal orthosilicates (contg. Li) used as Li battery cathodes or variable optical transmission device electrodes)				
IT	363141-31-5 RL: DEV (Device component use); USES (Uses) (cathodes; Li-intercalatable transition metal orthosilicates as Li battery cathodes or variable optical transmission device electrodes)				
IT	30734-07-7P, Iron lithium silicate (FeLi ₂ SiO ₄) 30734-08-8P, Lithium manganese silicate (Li ₂ MnSiO ₄) 60218-97-5P, Manganese silicate (MnSiO ₄) 277742-94-6P, Iron lithium manganese oxide (Fe _{1.2} Li _{1.4} Mn _{0.1} O ₄) 277742-95-7P, Lithium manganese titanium silicate (Li _{1.9} Mn _{0.8} Ti _{0.1} (SiO ₄)) 277742-97-9P 363141-30-4P, Iron lithium manganese silicate				

(Fe_{1.2}Li_{0.1}Mn_{0.1}(SiO₄))

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(cathodes; Li-intercalatable transition metal orthosilicates as Li **battery** cathodes or variable optical transmission device electrodes)

L10 ANSWER 16 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:688509 CAPLUS

DOCUMENT NUMBER: 133:255027

TITLE: Rechargeable lithium **battery** with lithium-containing phosphate active materials

INVENTOR(S): Barker, Jeremy

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: PCT Int. Appl., 47 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000057505	A1	20000928	WO 2000-US4401	20000222
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6153333	A	20001128	US 1999-274371	19990323
EP 1173897	A1	20020123	EP 2000-921341	20000222
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002540569	T2	20021126	JP 2000-607293	20000222

PRIORITY APPLN. INFO.:

US 1999-274371 A1 19990323

WO 2000-US4401 W 20000222

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Rechargeable lithium **battery** with lithium-containing phosphate active materials

AB The invention provides novel lithium-contg. phosphate materials having a high proportion of lithium per formula unit of the material. Upon electrochem. interaction, such material deintercalates lithium ions, and is capable of reversibly cycling lithium ions. The invention provides a rechargeable lithium **battery** which comprises an electrode formed from the novel lithium-contg. phosphates.

ST **battery** lithium contg phosphate electrode active material

IT Secondary batteries

(lithium; rechargeable lithium **battery** with lithium-contg. phosphate active materials)

IT **Battery** cathodes

(rechargeable lithium **battery** with lithium-contg. phosphate active materials)

IT 294664-30-5 294664-39-4 294664-56-5 294664-57-6 294664-59-8

294664-70-3 294664-72-5

RL: DEV (Device component use); USES (Uses)

(rechargeable lithium **battery** with lithium-contg. phosphate active materials)

L10 ANSWER 17 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:454356 CAPLUS
 DOCUMENT NUMBER: 133:61358
 TITLE: Lithium insertion electrode materials based on orthosilicate derivatives
 INVENTOR(S): Armand, Michel; Michot, Christophe; Ravet, Nathalie; Simoneau, Martin; Hovington, Pierre
 PATENT ASSIGNEE(S): Hydro-Quebec, Can.; Centre National de la Recherche Scientifique
 SOURCE: U.S., 5 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6085015	A	20000704	US 1998-47225	19980325
EP 1134826	A1	20010919	EP 2000-420045	20000314

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

PRIORITY APPLN. INFO.: CA 1997-2200999 A 19970325
 REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ST lithium **battery** insertion electrode orthosilicate deriv
 IT **Battery** cathodes
 Capacitor electrodes
 (lithium insertion electrode materials based on orthosilicate derivs.)
 IT 30734-07-7P, Iron lithium silicate $\text{FeLi}_2\text{SiO}_4$ 30734-08-8P, Lithium manganese silicate $\text{Li}_2\text{MnSiO}_4$ 60218-97-5P, Manganese silicate mnsio_4 277742-94-6P, Iron lithium manganese oxide ($\text{Fe}_{1.2}\text{Li}_{1.4}\text{Mn}_{0.1}\text{O}_4$) 277742-95-7P, Lithium manganese titanium silicate ($\text{Li}_{1.9}\text{Mn}_{0.8}\text{Ti}_{0.1}(\text{SiO}_4)$) 277742-96-8P, Iron lithium manganese oxide ($\text{Fe}_{1.2}\text{Li}_{0.1}\text{Mn}_{0.1}\text{O}_4$) **277742-97-9P**
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (lithium insertion electrode materials based on orthosilicate derivs.)

L10 ANSWER 18 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1999:72205 CAPLUS
 DOCUMENT NUMBER: 130:170706
 TITLE: Lithium mixed oxide cathode active materials, cathodes using the materials, and lithium batteries using them
 INVENTOR(S): Amine, Khalil
 PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11025983	A2	19990129	JP 1997-215424	19970704
US 6319632	B1	20011120	US 1999-448504	19991124
US 2002039681	A1	20020404	US 2001-955906	20010920

PRIORITY APPLN. INFO.: JP 1997-215424 A 19970704
 US 1999-448504 A3 19991124

ST olivine lithium phosphorus oxide cathode **battery**
 IT **Battery** anodes
Battery cathodes
Battery electrolytes
 (Li mixed oxides of olivine structure as cathode active materials for

high-energy-d. and high-voltage Li batteries)

IT 13824-63-0P 13826-59-0P, Lithium manganese phosphate (LiMnPO_4)
 13977-83-8P, Lithium nickel phosphate (LiNiPO_4) **220333-99-3P**,
 Lithium magnesium manganese phosphate ($\text{LiMgO-0.5MnO}_5\text{-1(PO}_4\text{)}$)
220334-01-0P, Lithium manganese nickel phosphate
 ($\text{LiMnO}_5\text{-1NiO}_5\text{-0.5(PO}_4\text{)}$) **220334-04-3P**, Cobalt lithium manganese
 phosphate ($\text{CoO-0.5LiMnO}_5\text{-1(PO}_4\text{)}$) **220334-05-4P**, Iron lithium
 manganese phosphate ($\text{FeO-0.5LiMnO}_5\text{-1(PO}_4\text{)}$) 220334-06-5P, Lithium
 magnesium nickel phosphate ($\text{LiMgO-0.5NiO}_5\text{-1(PO}_4\text{)}$) **220334-07-6P**,
 Lithium manganese nickel phosphate ($\text{LiMnO-0.5NiO}_5\text{-1(PO}_4\text{)}$) 220334-08-7P,
 Cobalt lithium nickel phosphate ($\text{CoO-0.5LiNiO}_5\text{-1(PO}_4\text{)}$) 220334-09-8P,
 Iron lithium nickel phosphate ($\text{FeO-0.5LiNiO}_5\text{-1(PO}_4\text{)}$)
 RL: DEV (Device component use); PNU (Preparation, unclassified); PRP
 (Properties); PREP (Preparation); USES (Uses)
 (Li mixed oxides of olivine structure as cathode active materials for
 high-energy-d. and high-voltage Li batteries)

L10 ANSWER 19 OF 19 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1998:596036 CAPLUS

DOCUMENT NUMBER: 129:205207

TITLE: Secondary lithium batteries with lithium and magnesium
 containing oxide cathodes

INVENTOR(S): Igawa, Akiko; Tsuruoka, Shigeo; Yoshikawa, Masanori;
 Muranaka, Kiyoshi; Komatsu, Yoshimi; Yamauchi, Shuko

PATENT ASSIGNEE(S): Hitachi, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10241691	A2	19980911	JP 1997-354358	19971224
PRIORITY APPLN. INFO.:			JP 1996-343041	19961224
ST	secondary lithium battery cathode; lithium magnesium metal oxide battery cathode			
IT	Battery cathodes (comps. and properties of magnesium contg. lithium transition metal oxide cathodes for secondary lithium batteries)			
IT	212075-82-6P, Cobalt lithium magnesium nickel oxide ($\text{CoO.1LiMgO.01NiO.9O}_2$) 212075-83-7P 212075-84-8P 212075-85-9P 212075-86-0P 212075-87-1P 212075-88-2P 212075-89-3P 212075-90-6P 212075-91-7P 212075-92-8P 212075-93-9P 212075-94-0P 212075-95-1P, Copper iron lithium nickel oxide ($\text{CuO.2FeO.2LiO-1.2NiO.6O}_2$) 212075-96-2P, Copper lithium manganese nickel oxide ($\text{CuO.15LiO-1.2MnO.25NiO.6O}_2$) 212075-97-3P 212075-98-4P 212075-99-5P 212076-00-1P 212076-01-2P 212076-02-3P 212076-03-4P 212076-04-5P 212076-05-6P 212076-06-7P 212076-07-8P 212076-08-9P 212076-09-0P, Iron lithium magnesium nickel tin oxide (FeO.2LiO- $1.2\text{MgO.02NiO.7SnO.1O}_2$) 212076-10-3P 212076-11-4P 212076-12-5P 212076-13-6P 212076-14-7P 212076-15-8P 212076-16-9P 212076-17-0P 212076-18-1P 212076-19-2P 212076-20-5P 212076-21-6P 212076-22-7P 212076-23-8P 212076-24-9P 212076-25-0P, Aluminum cobalt lithium nickel oxide ($\text{AlO.1CoO.1LiO-1.2NiO.8O}_2$) 212076-26-1P, Aluminum cobalt lithium nickel tin oxide ($\text{AlO.1CoO.1LiO-1.2NiO.7SnO.1O}_2$) 212076-27-2P, Cobalt lithium manganese nickel oxide ($\text{CoO.1LiO-1.2MnO.1NiO.8O}_2$) 212076-28-3P 212076-29-4P 212076-30-7P 212076-31-8P 212076-32-9P 212076-33-0P 212076-34-1P 212076-35-2P 212076-36-3P 212076-37-4P 212076-38-5P 212076-39-6P 212076-40-9P 212076-41-0P 212076-42-1P 212076-43-2P 212076-44-3P 212076-45-4P 212076-46-5P 212076-47-6P 212076-48-7P 212076-49-8P 212076-50-1P 212076-51-2P 212076-52-3P 212076-53-4P 212076-54-5P 212076-55-6P 212076-56-7P 212076-57-8P, Cobalt iron lithium magnesium tin oxide ($\text{CoO.7FeO.2LiO-1.2MgO.01SnO.1O}_2$)			

212076-58-9P 212076-59-0P 212076-60-3P 212076-61-4P 212076-62-5P
 212076-63-6P 212076-64-7P 212076-65-8P 212076-66-9P 212076-67-0P
 212076-68-1P 212076-69-2P 212076-70-5P 212076-71-6P 212076-72-7P
 212076-73-8P 212076-74-9P 212076-75-0P 212076-76-1P 212076-77-2P
 212076-78-3P 212076-79-4P 212076-80-7P 212076-81-8P 212076-82-9P
 212076-83-0P 212076-84-1P, Copper iron lithium manganese oxide
 (Cu_{0.2}Fe_{0.2}Li_{0.1}-1.2Mn_{0.6}O₂) 212076-85-2P 212076-86-3P 212076-87-4P
 212076-88-5P 212076-89-6P 212076-90-9P, Iron lithium manganese
 oxide phosphate (Fe_{0.19}Li_{0.1}-1.2Mn_{0.8}O_{1.96}(PO₄)_{0.01}) 212076-91-0P
 212076-92-1P 212076-93-2P 212076-94-3P
 212076-95-4P 212076-96-5P 212076-97-6P 212076-98-7P
 212076-99-8P 212077-00-4P 212077-01-5P 212077-02-6P 212077-03-7P
 212077-04-8P 212077-05-9P 212077-06-0P 212077-07-1P 212077-08-2P
 212077-09-3P 212077-10-6P 212077-11-7P 212077-12-8P 212077-13-9P
 212077-14-0P 212077-15-1P 212077-16-2P 212077-17-3P 212077-18-4P
 212077-19-5P 212077-20-8P 212077-21-9P 212077-22-0P 212077-23-1P
 212077-24-2P 212077-25-3P, Cobalt copper iron lithium oxide
 (Co_{0.2}Cu_{0.2}Fe_{0.6}Li_{0.1}-1.2O₂) 212077-26-4P, Copper iron lithium manganese
 oxide (Cu_{0.2}Fe_{0.6}Li_{0.1}-1.2Mn_{0.2}O₂) 212077-27-5P 212077-28-6P
 212077-29-7P 212077-30-0P 212077-31-1P 212077-32-2P 212077-33-3P
 212077-34-4P 212077-35-5P 212077-36-6P 212077-37-7P 212077-38-8P
 212077-39-9P, Cobalt iron lithium magnesium tin oxide (Co_{0.2}Fe_{0.7}Li_{0.1}-
 1.2Mg_{0.02}Sn_{0.1}O₂) 212077-40-2P 212077-41-3P 212077-42-4P, Iron
 lithium magnesium nickel tin oxide (Fe_{0.7}Li_{0.1}-1.2Mg_{0.01}Ni_{0.2}Sn_{0.1}O₂)
 212077-43-5P, Cobalt indium iron lithium oxide (Co_{0.2}In_{0.1}Fe_{0.7}Li_{0.1}-1.2O₂)
 212077-44-6P 212077-45-7P 212077-46-8P 212077-47-9P 212077-48-0P
 212077-49-1P 212077-50-4P 212077-51-5P 212077-52-6P 212077-53-7P
 RL: DEV (Device component use); IMF (Industrial manufacture); PRP
 (Properties); PREP (Preparation); USES (Uses)
 (compns. and properties of magnesium contg. lithium transition metal
 oxide cathodes for secondary lithium batteries)